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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/582,520

09/28/2006

Philippe Tailhades

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7590

10/21/2010

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EXAMINER

BRYANT, MICHAEL C

ART UNIT

PAPER NUMBER

2884

NOTIFICATION DATE

DELIVERY MODE

10/21/2010

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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<b>Office Action Summary</b>	<b>Application No.</b> 10/582,520	<b>Applicant(s)</b> TAILHADES ET AL.	
	<b>Examiner</b> CASEY BRYANT	<b>Art Unit</b> 2884	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 26 July 2010.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☒ Claim(s) 17 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)                        | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

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## **DETAILED ACTION**

### ***Status of Claims***

1. Applicant's reply, filed 7/26/2010, has been received and entered. Claims 1, 4 and 8 have been amended. No claims have been added or cancelled. Thus, claims 1-17 remain currently pending in this application.

### ***Response to Arguments***

2. Applicant's arguments filed 7/26/2010 have been fully considered but they are not persuasive.

#### *Rejections under 35 USC § 112*

Regarding the rejection of claim 1-17, Applicant's amendments to the claims overcome the previous rejections. Accordingly, the Examiner withdraws these rejections under 35 USC § 112. However, in view of claim amendments, new issues under § 112 have arisen.

#### *Rejections under 35 USC § 103*

Regarding the rejection of claims 1-5, 8, 9 and 12 under § 103 over Endo (US Pat. 5962854) in view of Torii et al., the Applicant's arguments are persuasive. Specifically, Torii fails to disclose a ferrite thermistor structure. However, in view of the newly added claim amendments, a new rejection has been made in view of Johnson, Jr. et al (US Pat. 4531110).

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

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4. Claims 1-17 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Regarding claims 1, 4 and 8, the ranges of x set forth in the claims (x is 0-2) do not produce a value within the inequality within the disclose range for y (y is 0-0.5). For example, if  $x=0$  then  $y>3$ . If  $x=2$ , then  $y>4/3$ . However, y must be in the range of 0-0.5. Thus it is not clear what values of x and y may be selected to satisfy the inequality, as per the claim, and it would have been obvious to one of ordinary skill how to make and/or use the invention. In order to overcome the rejection without over limiting the claims, it is the Examiner's recommendation that the limitation "x and y selected to satisfy the inequality  $x<3-x-y$ " be deleted to overcome the rejections. The empirical formula (I) inherently contains inequalities that must be satisfied. For example,  $x+y<3$  (otherwise iron would have a negative concentration). However, the claim still contains contradictions as presented in the 112, second paragraph rejections below.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

7. Regarding claims 1, 4 and 8, the limitation "in which iron is the majority metallic element" is in disagreement with the additional ranges provided. For example, the metal ions M concentration (x) is recited in a range of 0 to 2. According to equation (I), iron has a concentration of  $3-(x+y)$ . However, in order for iron to be the majority metallic element, x

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must be less than 1.5. The Examiner recommends the Applicant consider all the permutations of the x and y ranges to make sure they satisfy the recitation that iron is the majority metallic element, or to include a limitation that requires the condition of an iron majority to supersede the selected ranges. The balance of claims are rejected based on dependence.

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claims 1-5, 8, 9 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Endo (US Patent 5962854) in view of Johnson, Jr. et al. (US Pat. 4531110).

Regarding claims 1, 4 and 8, Endo teaches an apparatus and method for bolometric detection of IR radiation comprising: converting a change in temperature from heat produced by the IR radiation into a change in resistivity of a thin layer of a sensitive material by bolometric detection, and detecting the IR by using the sensitive material. Endo

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teaches using a Mn-Ni-Co-oxide thermistor material, but does not teach a spinel ferrite thermistor material. Johnson teaches that ferrite-based spinel thermistors of the formula  $M_{1-x}R_zFe_{2+x-z}O_4$  are known in the art (Fig. 2; col. 3, lines 10-30). In view of the negative temperature coefficient of ferrite spinel thermistors taught as by Johnson, it would have been obvious to one of ordinary skill in the art to use in the apparatus of method of Endo at the time of the invention.

Regarding claims 2, 3 and 9, Johnson teaches the metal (M) including Mn, Co, Cu, Zn and Ni (col. 3, lines 17-19).

Regarding claims 5 and 12, Endo teaches the sensor inserted in a packet (Fig. 7) including an inlet IR-transparent window **29**, the sensor comprising a IR-absorbing membrane (SiO<sub>2</sub>) **13** for converting absorbed IR into heat, and transferring the heat to the sensitive material (Fig. 2A-B, 5A; col. 11, lines 54-63).

11. Claims 6, 7, 10, 11 and 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Endo (US Patent 5962854) in view of Johnson, Jr. et al. (US Pat. 4531110) and Tu et al. (US Patent 5821598).

Regarding claim 6, 10, 13 and 14, Endo does not disclose a plurality of the sensors in the form of an array of pixels. Tu discloses an infrared detector comprising an array of pixels (col. 1, lines 7-10). It would have been obvious to one of ordinary skill in the art the time of the invention to provide an array of sensor elements, as taught by Tu, in order to form an imaging plane to perform IR imaging.

Regarding claims 7, 11, 15 and 16, Endo does not disclose the array integrated with CMOS circuitry. Tu teaches a IR imaging array integrated with CMOS circuitry (col. 3, lines 10-13). In view of the ability to integrate multiple electronics (e.g. readout circuitry, ACIS,

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etc.) on a single chip using CMOS, it would have been obvious to one of ordinary skill in the art to use CMOS circuitry in the device of Endo.

### ***Allowable Subject Matter***

12. Claim 17 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten to overcome the rejections under 35 USC § 112, and rewritten in independent form including all of the limitations of the base claim and any intervening claims.

13. The following is a statement of reasons for the indication of allowable subject matter: The prior art of record discloses a ferrite spinel thermistor of 20 micron thickness (see US Pat. 4531110). However, the prior art of record fails to disclose or suggest, in combination with the claimed elements, wherein the thickness of ferrite spinel thermistor is on the order of only 10-500 nm thick. Furthermore, it would not have been an obvious step to one of ordinary skill in the art at the time of the invention to reduce the thickness of the thermistor of Johnson by 2-3 orders of magnitude since it would significantly affect the performance (e.g. resistivity) of the device.

### ***Conclusion***

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory

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period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CASEY BRYANT whose telephone number is (571)270-1282. The examiner can normally be reached on Monday - Friday, 8am - 5pm, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Porta can be reached on (571)272-2444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/C. B./  
Examiner, Art Unit 2884

/David P. Porta/  
Supervisory Patent Examiner, Art  
Unit 2884